Please reply to the GENETICS BUILDING

July 5, 1957

Professor J.B.S? Haldane
Indian Statistical Institute
Calcutta, India

Dear Professor Haldane:

Your very gracious postcard has just arrived, and I am very appreciative of your remarks. I'm sorry too that we did not get to see you in London— I did look for you at the tea at the Royal Society meeting on cytoplasmic inheritance, but failed to make contact. We did not get around to visit any of the labs. except for Stocker and Spicer with whom we have been collaborating directly.

In any case, I hope you will have a happy and fruitful time at Calcutta, the geopolitical overtones notwithstanding.

Nothing would please me more than to be able to visit India some time, and you may have left yourself open to an imposition sooner than you had counted on! In fact, the Lederbergs are leaving in a month for a three-month Fulbright lecture tour in Australia, in large part a return visit to Professor Rubbo who spent some months here in '53-'54; I am also looking forward to some experimental work on virus recombination in Burnet's institute.

We had already contemplated using the occasion for a return via India and Europe. In fact, through the good offices of Hilary Koprowski, we have had some correspondence with Khanolkar and Gopal-Ayengar at Bombay (the Cancer Research Centre of the Atomic Energy Establishment.) This has hung fire, as we have not been ready to make definite commitments, and I could not say whether their expressed interest, and connected means, would go so far as to help finance such a detour.

There are two difficulties in the way of such a trip/ The more pressing is whether I will have the time. A new department of Medical Genetics has just been established, in hopes of improving the penetration of genetic thought into medical research, training and practice, and there is still a good deal of organizational-work that needs doing, to the point where a further three weeks absence at this critical time might be very awkward. (In American Universities, the colleges rather than the departments are the main lines of authority, and a separate genetics department actually within the medical school is needed if the subject is to be adequately represented .) However, depending on how things go this summer, it might be possible for us to postpone our return to Madison until the end of November. This might allow us to spend as much as three weeks in India. I should be able to give a definite answer on this by about October 1.

The second problem is, of course financing. We have, of course, our tickets

(i.e. Chicago)
for U.S./Sydney round-trip. The best information I can get locally is that it would cost about $300 each to convert these into round-the-world fares, via Sydney, Calcutta, and Westward. (I assume that Bombay would be included, or at not much higher cost.) Since a Chicago-Calcutta round-trip for one comes to about $1300, there would be a very substantial saving in cash, as well as travel time, if it were possible to make this arrangement. It might be well for you to confirm these figures as a penultimate step.

If you think the matter is worth pursuing further, I shall be very glad to hear from you, either here or in Australia, with regard to financial possibilities at least. We will then be able to come to an uncomplicated decision whether we must return directly to the States or can make this journey. If it does work out, we should probably proceed westward, stopping only at Milan (to see Cavalli) for a day or two en route home.

There would be no difficulty in converting our tickets at Melbourne or Sydney, especially as no exchange in $US would be required.

I will not renew my correspondence with Khanolkar until I have heard from you--in fact, if you would consult him yourself, all the better. I am sure you will have more pressing matters to attend to during your first weeks at Calcutta!

In the lab. we have still been following the trails of the sexual and transductional systems. Jacob made a brilliant contribution with his interrupted mating experiments, but it is unfortunately not the whole story, as some five percent of the zygotes don't fit the simple pattern. I'm inclined to think that the male gametic chromosome breaks at a particular point (centromere?) which may also tend to be the first part to enter, or is at least necessary for efficient pairing. However, it looks as if both fragments can (at least occasionally, if not often) participate in fertilization, whether their markers are recovered or not depending on crossing-over between the marker locus and the break point. Most of the divergence in our views comes from Jacob's stress on the majority cases, and my own on the not so rare exceptions.

I have also been diverted by a study of "L-forms" of E. coli, partly from a longstanding sense of frustration in trying to understand them. They have been attributed all kinds of life-cyclical meaning, including sexuality, but that is probably all nonsense. According to our own observations, the 'L-forms' are a consequence of a defective cell wall, the defect arising either from external inhibition (e.g. by penicillin) or a genetic-metabolic block, e.g. in the biosynthesis of diaminopimalic acid, a critical wall constituent, or of other components. Without its wall, the bacterial protoplast still grows, but in an anisotropic medium like agar, it forms occasional blebs which expand and pinch off. Without the wall, there is no regular division mechanism for the cell, so the L-form is in effect a 'colony of protoplasts. I had had some hopes that these wall-less creatures would be useful in genetic experiments, e.g. in the uptake of raw DNA, but so far this hasn't worked. We rather badly need such a system in E. coli (i.e. an analogue of the pneumococcus transformation).

Quite apart from the personal accolades, that was a remarkable article you did in the Penguin New Biology. My own writing is as clumsy as can be by comparison

With best wishes,

Yours sincerely,

Joshua Lederberg
Professor of Medical Genetics